Honeywell

MasterLogic-50 Series

RTD Input Module MLF-RD04A

Installation Manual

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o Safety Precautions

- Safety Precautions is for using the product safe and correct in order to prevent the accidents and danger, so always follow the instructions.
- The precautions explained here only apply to the MLF-RD04A (Analog Input module). For safety precautions on the PLC system, refer to the MasterLogic-50 CPU User's manual.
- The precautions are divided into 2 sections, 'Warning' and 'Caution'. Each of the meanings is represented as follows.

⚠Warning If violated instructions, it can cause death, fatal injury or considerable loss of property.

⚠Caution If violated instructions, it can cause a slight injury or slight loss of products

- The symbols which are indicated in the PLC and User's Manual mean as follows

⚠ This symbol means paying attention because of danger of injury, fire, or malfunction.

⚠ This symbol means paying attention because of danger of electrical shock.

- Store this datasheet in a safe place so that you can take it out and read it whenever necessary. Always forward it to the end user.

⚠Warning

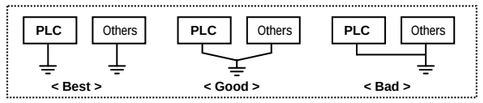
- Do not contact the terminals while the power is applied.
  Risk of electric shock and malfunction.
- Protect the product from being gone into by foreign metallic matter.
  Risk of fire, electric shock and malfunction.

⚠Caution

- Be sure to check the rated voltage and terminal arrangement for the module before wiring work.
  Risk of electric shock, fire and malfunction.
- Tighten the screw of terminal block with the specified torque range.
  If the terminal screw looses, it can cause fire and electric shock.
- Use the PLC in an environment that meets the general specifications contained in this datasheet.
  Risk of electrical shock, fire, erroneous operation and deterioration of the PLC.
- Be sure that external load does not exceed the rating of output module.
  Risk of fire and erroneous operation.
- Do not use the PLC in the environment of direct vibration
  Risk of electrical shock, fire and erroneous operation.
- Do not disassemble, repair or modify the PLC.
  Risk of electrical shock, fire and erroneous operation.
- When disposing of PLC and battery, treat it as industrial waste.
  Risk of poisonous pollution or explosion.

Precautions for use

- Do not Install other places except PLC controlled place.
- Make sure that the FG terminal is grounded with class 3 grounding which is dedicated to the PLC. Otherwise, it can cause disorder or malfunction of PLC



- Connect expansion connector correctly when expansion module are needed,
- Do not detach PCB from the case of the module and do not modify the module.
- Turn off power when attaching or detaching module.
- Cellular phone or walkie-talkie should be farther than 30cm from the PLC
- Input signal and communication line should be farther than minimum 100mm from a high-tension line and a power line in order not to be affected by noise and magnetic field.

Before handling the product

Before using the product, read the datasheet and the User's manual through to the end carefully in order to use the product efficiently.

MasterLogic-50 Series User's Manual

Name	Code
MasterLogic-50 User's manual(Programming software)	10310000512
MasterLogic-50 Basic Instruction & Programming User's manual	10310000510

1. Introduction

RTD (Resistance Temperature Detector) module used in association with CPU module of MasterLogic-50 series (here in after referred to as MLF-RD04A). The RTD module convert the input temperature data measured by platinum RTD sensor, PT100 or JPT100, to signed 16-bit binary data so to output applicable digital value.

2. General Specifications

No	Item	Specifications	Standard
1	Operating temp.	0℃ ~ +55℃	
2	Storage temp.	-25℃ ~ +70℃	
3	Operating humidity	5 ~ 95%RH (Non-condensing)	
4	Storage humidity	5 ~ 95%RH (Non-condensing)	
5	Vibration	For discontinuous vibration Frequency / Acceleration / Amplitude / Number 10≤f< 57 Hz / - / 0.075mm / Each 10 times in X,Y,Z directions 57≤f≤150 Hz / 9.8m/s^2(1G) / - / Each 10 times in X,Y,Z directions For continuous vibration Frequency / Acceleration / Amplitude 10≤f< 57 Hz / - / 0.035mm 57≤f≤150 Hz / 4.9m/s^2(0.5G) / -	IEC61131-2
6	Shocks	* Max. impact acceleration: 147 ㎨(15G) * Authorized time: 11 ㎳ * Pulse wave : Sign half-wave pulse (Each 3 times in X,Y,Z directions)	IEC61131-2
7	Noise	Square wave impulse noise: ±1,500V Electrostatic discharging: Voltage : 4kV (contact discharging) — IEC61131-2 IEC61000-4-2 Radiated electromagnetic field noise: 27 ~ 500MHz, 10 V/m — IEC61131-2 IEC61000-4-3 Fast Transient /burst noise: Class / Power module / Digital/Analog I/O communication interface — IEC61131-2 IEC61000-4-4 Voltage: 2kV / 1 kV	
8	Ambient conditions	No corrosive gas or dust	
9	Operating height	2000m or less	
10	Pollution degree	2 or less	
11	Cooling method	Self-cooling	

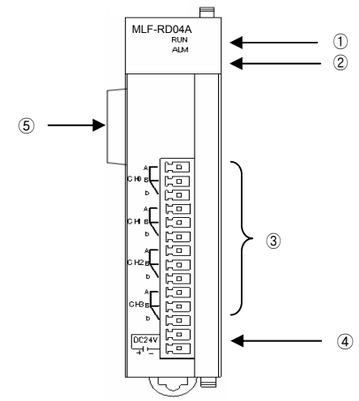
3. Performance Specifications

Item		Specifications	
No. of input channel		4 channels	
Input sensor type	Pt100	JIS C1604-1997	
	JPt100	JIS C1604-1981 , KS C1603-1991	
Temperature input range	Pt100	-200 ~ 600℃	
	JPt100	-200 ~ 600℃	
Digital output	Temperature display (unit:0.1)	PT100	-200.0 ~ 600.0℃
		JPT100	-200.0 ~ 600.0℃
	Scaling display	0 ~ 4000	
Accuracy	Normal temp.(25℃)	±0.3%	
	Full temp.(0~55℃)	±0.5%	
Conversion speed		40ms / channel	
Insulation	Channel to Channel	Non- insulation	
	Terminal to PLC Power	Photo-Coupler insulation	
I/O points occupied		Fixed type :64 points,Changeable type:16 points	
Wiring method		3-wire	
Function	Filtering	Digital filter (160 ~ 64000ms)	
	Alarm	Disconnection detection	
Terminal block		15 points	
Current consumption	DC5V	0.1A	
	DC24V	0.1A	
Weight		630g	

Remark

▶ When analog input module is released from the factory, Offset/Gain value is as adjusted for respective analog input ranges, which is unavailable for user to change.

4. Part names of functions



No.	Descriptions
①	RUN LED ▶Displays the hardware operation status (Fatal error) • On : Normal status • Flickering : Error(0.2s flickering) • Off : hardware error
②	ALM LED ▶ Displays the disconnection status of the channels (Alarm LED) • On : Normal status • Flickering : Disconnection is detected(1s flickering) • Off : Operation stop of all channels
③	Terminal block ▶ 3-wire RTD sensors can be connected.
④	External power terminal ▶ Supplies the external DC24V.
⑤	Expansion connector ▶ Connects the module with an expansion module.

5. Handling precaution

1) Do not drop or impact the product.
2) Do not detach PCB from the case, it may cause malfunction.
3) During wiring or other work, do not allow any wire chips get inside the product.
4) Switch the external power off before mounting or removing the module and the cable.
5) Be sure to turn the drive device off for detaching or inserting the cable

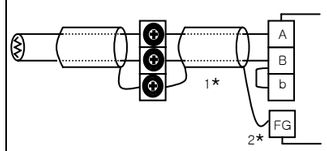
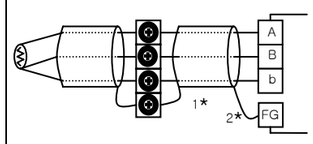
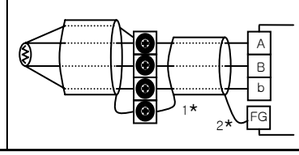
6. Wiring

6.1 Precautions for wiring

1) Don't let AC power line near to analog output module's external output signal line. With an enough distance kept away between, it will be free from surge or inductive noise.
2) Cable shall be selected in due consideration of ambient temperature and allowable current, whose size is not less than the max. cable standard of AWG22 (0.3㎟).
3) Don't let the cable too close to hot device and material or in direct contact with oil for long, which will cause damage or abnormal operation due to short-circuit.
4) Check the polarity when wiring the terminal.
5) Wiring with high-voltage line or power line may produce inductive hindrance causing abnormal operation or defect.

6.2 Wiring examples

1) 3 types of sensor connecting methods are available (2, 3 and 4-wire)
Used an identical type of wire (thickness, length, etc) for each 3 wire when extended lead wire is used
2) The resistance of each conductor is to be less than 10Ω. (If lager than this, If will cause an error.)
3) Length of wire is to be as short as possible and it is recommended to connect the wire directly to the terminal block of MLF-RD4A without connection terminal unit. If a connection terminal is to be used, compensating wire shall be connected as shown below.

Method	Wiring examples	Disconnection
2-wire		1.When the channel is enabled - Disconnection detection enabled. 2. When the channel is disabled - Disconnection detection disabled.
3-wire		
4wire		

*1: Let the terminals B and b short on the terminal block of the module if 2-wired sensor is to be connected.
*2: If sensor and compensating wire are shielded, shield line can be connected to FG.

7. Configuration of internal memory

7.1 U area of RTD module

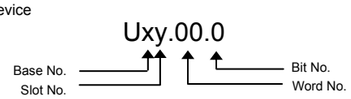
Device assignment	Descriptions	R/W	Signal Direction
Uxy.00.E	Module H/W Error	R	RTD→ CPU
Uxy.00.F	Module Ready		
Uxy.01.0	Channel 0 Operation Flag	R	RTD→ CPU
Uxy.01.1	Channel 1 Operation Flag		
Uxy.01.2	Channel 2 Operation Flag		
Uxy.01.3	Channel 3 Operation Flag		
Uxy.01.4	Channel 0 Disconnection Flag		
Uxy.01.5	Channel 1 Disconnection Flag		
Uxy.01.6	Channel 2 Disconnection Flag		
Uxy.01.7	Channel 3 Disconnection Flag		
Uxy.01.8	Channel 0 Setting Error		
Uxy.01.9	Channel 1 Setting Error		
Uxy.01.A	Channel 2 Setting Error		
Uxy.01.B	Channel 3 Setting Error		
Uxy.04	Channel 0 Measured Temperature	R	RTD→ CPU
Uxy.05	Channel 1 Measured Temperature		
Uxy.06	Channel 2 Measured Temperature		
Uxy.07	Channel 3 Measured Temperature		
Uxy.08	Channel 0 Scaled Value	R	RTD→ CPU
Uxy.09	Channel 1 Scaled Value		
Uxy.10	Channel 2 Scaled Value		
Uxy.11	Channel 3 Scaled Value		

7.2 Parameter area of RTD module

Address		Description	Initial	R/W	Remark
Hex	Dec				
0_H	0	Channel enable	0	R/W	PUT/GET
1_H	1	Channel 0 Sensor Type	0	R/W	
2_H	2	Channel 1Sensor Type			
3_H	3	Channel 2 Sensor Type			
4_H	4	Channel 3 Sensor Type			
5_H	5	Temperature Display Unit	0	R/W	
6_H	6	Channel 0 Filter Value	0	R/W	
7_H	7	Channel 1 Filter Value			
8_H	8	Channel 2 Filter Value			
9_H	9	Channel 3 Filter Value			
A_H~11_H	10~17	Reserved	0	R/W	
12_H	18	Scaling enable	0	R/W	
13_H~43_H	19~67	Reserved	-32768	R/W	
44_H	68	Channel 0 Disconnection Information (code)	-	R	
45_H	69	Channel 1 Disconnection Information (code)			
46_H	70	Channel 2 Disconnection Information (code)			
47_H	71	Channel 3 Disconnection Information (code)			

Remark

How to use U device



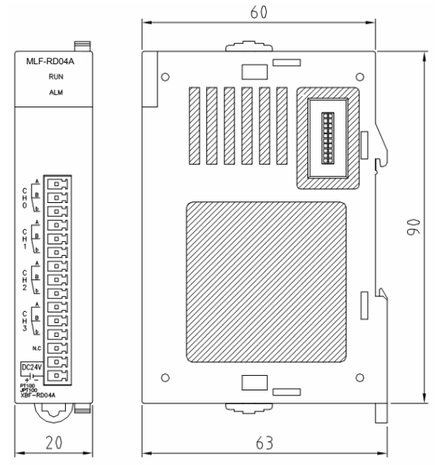
Ex1) When reading "CH0 Active" bit of Base 1, Slot 6 module -> U16.01.0
Ex2) When reading "CH0 Active" bit of Base 0, Slot 11 module -> U0B.01.0

8. Disconnection information

Address (Dec)	Error code	Description	Remark
68 ~ 71	0	Normal operation	ALM LED Off
	1	A line disconnection	ALM LED 1s flickering
	2	B line disconnection	
	3	A line/B line disconnection	

9. Dimensions

Unit: mm



10. Warranty

1) Warranty period
Honeywell provides a 12-month-warranty for new MasterLogic PLC systems and 90-day-warranty for spare parts from the date of delivery.

2) Warranty conditions
For any defects of the product within the warranty period, Honeywell will replace or repair the defective parts free of charge except the following cases:

a) The defects caused by improper condition, environment or operation
b) The defects caused by external devices.
c) The defects caused by redesigning or repairing based on user's own discretion.
d) The defects caused by improper usage of the product.
e) The defects caused by natural disaster.

3) This warranty is limited to the PLC component only. It is not valid for the other related system which the PLC is attached to.